

12



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,315	12/28/1999	LARRY EUGENE MOSLEY	884.209US1	9830

21186 7590 04/23/2002

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EXAMINER

THOMAS, ERIC W

ART UNIT	PAPER NUMBER
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2831

DATE MAILED: 04/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/473,315

Applicant(s)

MOSLEY, LARRY EUGENE

Examiner

Eric W Thomas

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 2/13/02 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/473,315 is acceptable and a CPA has been established. An action on the CPA follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Naito et al. (US 6,034,864).

Naito et al. disclose in fig. 2A, a capacitor comprising at least four conductive layers (33-34) embedded in a dielectric; and a plurality of vias (40-41) coupling the at least four conductive layers to a plurality of connection sites (38-39).

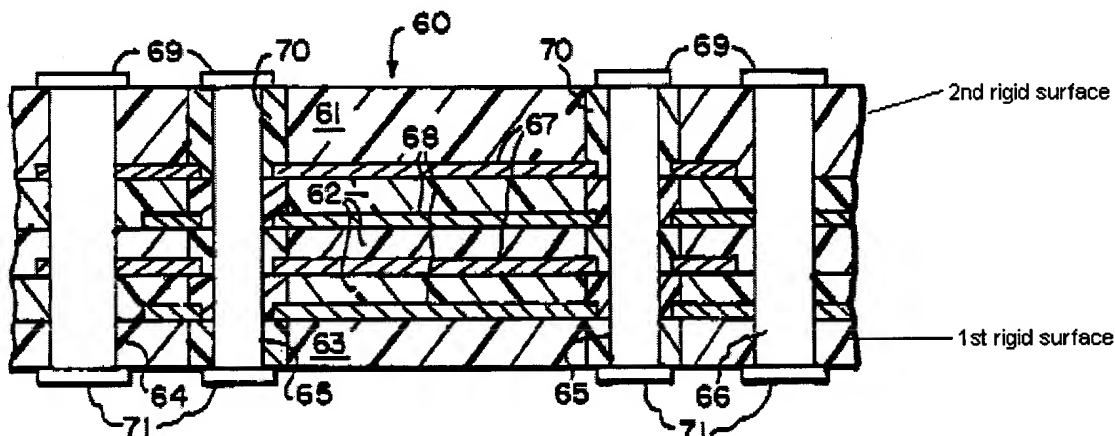
Regarding claim 5, the vias are plated through-holes.

4. Claims 1, 5, 9-10, are rejected under 35 U.S.C. 102(e) as being anticipated by Farooq et al. (US 6,072,690).

Farooq et al. disclose in fig. 3C, a capacitor comprising: at least four conductive layers (67, 68) embedded in a dielectric; and a plurality of vias (64, 66) coupling the at least four conductive layers to a plurality of connection sites (69).

Regarding claim 5, the vias are plated through-holes.

Regarding claim 9, Farooq et al. disclose in fig. 3 A, a multilayer capacitor having a pair of outer surfaces (see below), and a number of pads (69) located on two of the number of outer surfaces; wherein two of the number of pads are capable of being coupled to a substrate using a solder bump. Although Farooq et al. do not expressly state that the outer surfaces are "substantially rigid", it is an inherent feature of the capacitor of Farooq et al. (see method of forming the capacitor – a fired ceramic green sheet produces a "substantially" rigid surface).



Regarding claim 10, the multilayer capacitor includes a number of parallel conductive layers and the number of pads are coupled to the number of parallel conductive layers through vias.

Art Unit: 2831

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herrell ^{et al.} (US 6,191,479).

SR 4/19/02

Regarding claim 1, Herrell et al. disclose in fig. 1, a plurality of conductive layers (13-14), embedded in a dielectric (12, 15, 18); and a plurality of vias (see fig. 3A-3B) coupling two conductive layers to a plurality of connection sites (69). Herrell et al. do not expressly state that there are at least 4 conductive layers. It should be noted that Herrell et al. teach that the number of conductive layers are not limited to the embodiments shown. Forming capacitors having more than 4 conductive layers is well known in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the capacitor of Herrell et al. using multiple conductive layers, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 2, Herrell et al. disclose the claimed invention except for the thickness of the capacitor. It would have been an obvious matter of design choice to form the capacitor of Herrell having a thickness of between 0.5 mm to 1 mm, since such a modification would have involved a mere change in the size of a component. A

Art Unit: 2831

change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claim 3, Herrell et al. disclose the claimed invention, except for the capacitance being from 20 to 30 microfarads. It is well known in the capacitor art to form capacitors having a particular capacitance for an electrical system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the capacitor of Herrell et al. having a capacitance of 20 to 30 microfarads, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 4, Herrell et al. disclose the plurality of C4 connection sites have a pitch of 250 microns.

Regarding claim 5, Herrell et al. disclose the vias are plated through-holes.

7. Claims 2-3, are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al.

Regarding claim 2, Farooq et al. disclose the claimed invention except for the thickness of the capacitor being between about 0.5 millimeter and about 1 millimeter. It would have been an obvious matter of design choice to form the capacitor having a thickness of 0.6 millimeters, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claim 3, Farooq et al. disclose the claimed invention, except for the capacitance being from 20 to 30 microfarads. It is well known in the capacitor art to

form capacitors having a particular capacitance for an electrical system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the capacitor of Farooq et al. having a capacitance of 20 to 30 microfarads, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

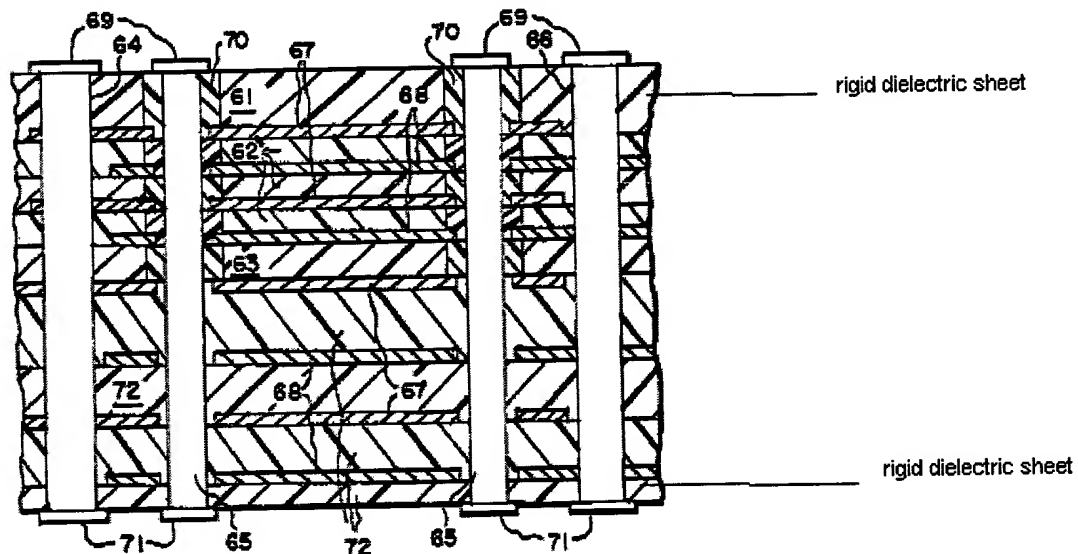
Claims 6-8, & 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al. (US 6,072,690).

Regarding claim 6, Farooq et al. disclose (in fig. 3c) a plurality of first conductive layers (67), each of the plurality of first conductive layers formed on a first dielectric sheet (72); a plurality of second conductive layers, each of the plurality of second conductive layers formed on a second dielectric sheet (72), and the plurality of second conductive layers interlaced with the plurality of first conductive layers; a pair of dielectric sheets (see below) having a thickness, for providing a pair of substantially rigid outer surfaces for the plurality of second conductive layers interlaced with the plurality of first conductive layers, each of the pair of substantially rigid outer surfaces having a plurality of connection sites operable for coupling the capacitor to a substrate using a controlled collapse chop connection (C4); and a plurality of vias (64, 66) coupling the plurality of first conductive layers and the plurality of second plurality of second conductive layers to at least two of the plurality of connection sites.

Farooq et al. do not disclose the thickness of the pair of dielectric sheets having a thickness of slightly greater than 7 microns. It would have been an obvious matter of

Art Unit: 2831

design choice to form the pair of dielectric sheets having a thickness of slightly greater than 7 microns, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

**FIG. 3B**

Regarding claim 7, Farooq et al. disclose the claimed invention except for the material used in the conductive layers. Tungsten paste is a well known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Farooq et al. using tungsten paste, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 8, Farooq et al disclose the number of surfaces is two.

Regarding claim 11, Farooq et al disclose the claimed invention except for the number of conductive layers is greater than about 50. The capacitor of Farooq et al. is not limited to the illustrated embodiments. It is well known in the capacitor art to use more than 50 electrode layers (conductive layers) to form a capacitor (in efforts to increase capacitance). It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a capacitor having more than 50 layers of electrodes, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 12, Farooq et al. disclose the claimed invention except for the number of pads is greater than about 4000. The capacitor of Farooq et al. is not limited to the illustrated embodiments. It is well known in the capacitor art to use more than 4000 connecting pads. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a capacitor having more than 4000 pads, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ

Response to Arguments

8. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.
9. Applicant's arguments filed 3/12/02 have been fully considered but they are not persuasive.

Art Unit: 2831

Applicant's arguments regarding claims 6-12 have been addressed in the action dated 8/13/01.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W Thomas whose telephone number is (703) 305-0878. The examiner can normally be reached on Mon & Sat 9:00 AM - 9:30 PM; Tue-Fri 5:30PM-10:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ewt
April 18, 2002

Dean A. Reichard 4/19/02

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